$costvar,\ c$
$termvar,\ x,\ y,\ z,\ f$
$baseAttackVar,\ b$
$index,\ i,\ j,\ k$

$$
\begin{array}{lll}
op & ::= & \\
 & | & \mathsf{op}_{\odot} \\
 & | & \mathsf{op}_{\triangleright} \\
 & | & \mathsf{op}_{\sqcup} \\
 & | & \mathsf{rel}_{\rightarrow} \\
 & | & \mathsf{rel}_{\leftarrow} \\
 & | & \mathsf{rel}_{\multimap} \\
 & | & \mathsf{rel}_{\rightarrow}(c, -) \\
 & | & \mathsf{rel}_{\leftarrow}(c, -) \\
 & | & \mathsf{rel}_{\multimap}(c, -) \\
 & | & \mathsf{rel}_{\circ\!\!-\!\!\circ}(c, -)
\end{array}
$$

$$
\begin{array}{lll}
C & ::= & \\
 & | & c \\
 & | & op(C_1, C_2)
\end{array}
$$

$$
\begin{array}{lll}
T & ::= & \\
 & | & b \\
 & | & T_1 \odot_{\mathsf{op}_{\odot}} T_2 \\
 & | & T_1 \triangleright_{\mathsf{op}_{\triangleright}} T_2 \\
 & | & T_1 \sqcup_{\mathsf{op}_{\sqcup}} T_2 \\
 & | & (T)
\end{array}
$$

$$
\begin{array}{lll}
E & ::= & \\
 & | & b \\
 & | & E_1 \odot_{\mathsf{op}_{\odot}} E_2 \\
 & | & E_1 \triangleright_{\mathsf{op}_{\triangleright}} E_2 \\
 & | & E_1 \sqcup_{\mathsf{op}_{\sqcup}} E_2 \\
 & | & E_1 \rightarrow_{\mathsf{rel}_{\rightarrow}(c,-)} E_2 \\
 & | & E_2 \leftarrow_{\mathsf{rel}_{\leftarrow}(c,-)} E_1 \\
 & | & E_1 \multimap_{\mathsf{rel}_{\multimap}(c,-)} E_2 \\
 & | & E_1 \circ\!\!-\!\!\circ_{\mathsf{rel}_{\circ\!\!-\!\!\circ}(c,-)} E_2 \\
 & | & (E) \qquad\qquad \mathsf{S}
\end{array}
$$

$$
\begin{array}{lll}
\Gamma,\ \Delta,\ \Theta,\ \Psi & ::= & \\
 & | & \cdot \\
 & | & (E, c) \\
 & | & \Theta, \Psi
\end{array}
$$

$\boxed{\Gamma; \Delta \vdash_C T}$

$$\frac{}{\cdot; (b, c) \vdash_c b} \quad \text{T\_VAR}$$

$$\frac{}{(b, c); \cdot \vdash_c b} \quad \text{T\_VARC}$$

$$\frac{\Gamma_1; \Delta_1 \vdash_{c_1} T_1 \quad \Gamma_2; \Delta_2 \vdash_{c_2} T_2}{\Gamma_1, \Gamma_2; \Delta_1, \Delta_2 \vdash_{\mathsf{op}_{\odot}(c_1, c_2)} T_1 \odot_{\mathsf{op}_{\odot}} T_2} \quad \text{T\_PARA}$$

$$\frac{\Gamma_1; \Delta_1 \vdash_{c_1} T_1 \quad \Gamma_2; \Delta_2 \vdash_{c_2} T_2}{\Gamma_1, \Gamma_2; \Delta_1, \Delta_2 \vdash_{\mathsf{op}_\triangleright(c_1,c_2)} T_1 \triangleright_{\mathsf{op}_\triangleright} T_2} \quad \text{T\_SEQ}$$

$\boxed{\Theta; \Psi \vdash_C E}$

$$\frac{}{\cdot; (E, c) \vdash_c E} \quad \text{E\_VAR}$$

$$\frac{}{(E, c); \cdot \vdash_c E} \quad \text{E\_VARC}$$

$$\frac{\Theta; \Psi \vdash_{c_1} T_1 \odot_{\mathsf{op}_\odot} (T_2 \triangleright_{\mathsf{op}_\triangleright} T_3) \quad \Theta; \Psi \vdash_{c_2} (T_1 \odot_{\mathsf{op}_\odot} T_2) \triangleright_{\mathsf{op}_\triangleright} (T_1 \odot_{\mathsf{op}_\odot} T_3) \quad \mathsf{rel}_{\multimap\multimap}(c_1, c_2)}{\Theta; \Psi \vdash_c (T_1 \odot_{\mathsf{op}_\odot} (T_2 \triangleright_{\mathsf{op}_\triangleright} T_3)) \multimap\multimap_{\mathsf{rel}_{\multimap\multimap}(c_1,-)} ((T_1 \odot_{\mathsf{op}_\odot} T_2) \triangleright_{\mathsf{op}_\triangleright} (T_1 \odot_{\mathsf{op}_\odot} T_3))} \quad \text{E\_DIST1}$$

$$\frac{\Theta_1; \Psi_1 \vdash_{c_1} E_1 \quad \Theta_2; \Psi_2 \vdash_{c_2} E_2}{\Theta_1, \Theta_2; \Psi_1, \Psi_2 \vdash_{\mathsf{op}_\odot(c_1,c_2)} E_1 \odot_{\mathsf{op}_\odot} E_2} \quad \text{E\_PARAI}$$

$$\frac{\Theta_2; \Psi_1 \vdash_{\mathsf{op}_\odot(c_1,c_2)} E_1 \odot_{\mathsf{op}_\odot} E_2 \quad \Theta_1, (E_1, c_1), (E_2, c_2), \Theta_3; \Psi_2 \vdash_{c_3} E_3}{\Theta_1, \Theta_2, \Theta_3; \Psi_1, \Psi_2 \vdash_{c_3} E_3} \quad \text{E\_PARAE}$$

$$\frac{\Theta_1; \Psi_1 \vdash_{c_1} E_1 \quad \Theta_2; \Psi_2 \vdash_{c_2} E_2}{\Theta_1, \Theta_2; \Psi_1, \Psi_2 \vdash_{\mathsf{op}_\triangleright(c_1,c_2)} E_1 \triangleright_{\mathsf{op}_\triangleright} E_2} \quad \text{E\_SEQI}$$

$$\frac{\Theta_1; \Psi_2 \vdash_{\mathsf{op}_\triangleright(c_1,c_2)} E_1 \triangleright_{\mathsf{op}_\triangleright} E_2 \quad \Theta_2; \Psi_1, (E_1, c_1), (E_2, c_2), \Psi_3 \vdash_{c_3} E_3}{\Theta_1, \Theta_2; \Psi_1, \Psi_2, \Psi_3 \vdash_{c_3} E_3} \quad \text{E\_SEQE}$$

$$\frac{\Theta_1, (E_1, c_1), (E_2, c_2), \Theta_2; \Psi \vdash_c E}{\Theta_1, (E_2, c_2), (E_1, c_1), \Theta_2; \Psi \vdash_c E} \quad \text{E\_EX}$$

$$\frac{\Theta; \Psi, (E_1, c_1) \vdash_{c_2} E_2 \quad \mathsf{rel}_{\to}(c_1, c_2)}{\Theta; \Psi \vdash_{c_2} E_1 \to_{\mathsf{rel}_{\to}(c_1,-)} E_2} \quad \text{E\_IMPRI}$$

$$\frac{\Theta_1; \Psi_1 \vdash_{c_2} E_1 \to_{\mathsf{rel}_{\to}(c_1,-)} E_2 \quad \Theta_2; \Psi_2 \vdash_{c_1} E_1}{\Theta_1, \Theta_2; \Psi_1, \Psi_2 \vdash_{c_2} E_2} \quad \text{E\_IMPRE}$$

$$\frac{\Theta; (E_1, c_1), \Psi \vdash_{c_2} E_2 \quad \mathsf{rel}_{\leftarrow}(c_1, c_2)}{\Theta; \Psi \vdash_{c_2} E_2 \leftarrow_{\mathsf{rel}_{\leftarrow}(c_1,-)} E_1} \quad \text{E\_IMPLI}$$

$$\frac{\Theta_1; \Psi_1 \vdash_{c_2} E_2 \leftarrow_{\mathsf{rel}_{\leftarrow}(c_1,-)} E_1 \quad \Theta_2; \Psi_2 \vdash_{c_1} E_1}{\Theta_1, \Theta_2; \Psi_1, \Psi_2 \vdash_{c_2} E_2} \quad \text{E\_IMPLE}$$

$$\frac{\Theta, (E_1, c_1); \Psi \vdash_{c_2} E_2 \quad \mathsf{rel}_{\multimap}(c_1, c_2)}{\Theta; \Psi \vdash_{c_2} E_1 \multimap_{\mathsf{rel}_{\multimap}(c_1,-)} E_2} \quad \text{E\_IMPI}$$

$$\frac{\Theta_1; \Psi_1 \vdash_{c_2} E_1 \multimap_{\mathsf{rel}_{\multimap}(c_1,-)} E_2 \quad \Theta_2; \Psi_2 \vdash_{c_1} E_1}{\Theta_1, \Theta_2; \Psi_1, \Psi_2 \vdash_{c_2} E_2} \quad \text{E\_IMPE}$$

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Definition rules:         18 good    0 bad
Definition rule clauses:  32 good    0 bad
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